

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 03VID0432W0P	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2004/011227	International filing date (day/month/year) 07/10/2004	(Earliest) Priority Date (day/month/year) 07/10/2003
Applicant  VIDA, Nikolaus		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).



With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐

**Certain claims were found unsearchable** (See Box II).

3. ☐

**Unity of invention is lacking** (see Box III).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.



none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP2004/011227

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

The invention relates in general to surfaces along which media, e.g. gases, liquids or multi-phase mixtures are flowing, especially to a device for transportation of a flowing medium and/or for heat exchange between a flowing medium and the device and also to the application of such devices.

For reducing particle deposition and ice formation on a surface along which a medium flows, the invention proposes a surface with dimples, the edges of which are rounded, thereby forming a central dimple area and at least one curvature area for each dimple, which continuously connects the dimple to the surrounding surface. The invention further proposes a layer comprising the surface, methods for producing the surface and also the application of a device provided with such surface in an air-conditioning system.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/011227

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F15D1/06 F15D1/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F15D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 11 082860 A (HIRATA JUNICHI) 26 March 1999 (1999-03-26)	1,4, 6-11,34, 36,37
A	paragraphs '0001! - '0004!, '0010!, '0012!, '0041! - '0045!, '0070!, '0091!; figures 2,8,14 -& PATENT ABSTRACTS OF JAPAN vol. 1999, no. 08, 30 June 1999 (1999-06-30) -& JP 11 082860 A 26 March 1999 (1999-03-26)	12,13, 17, 21-30,40
A	abstract ----- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

23 December 2004

Date of mailing of the international search report

03/01/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Rechenmacher, M

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/011227

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 664 928 A (ROBERTS ERNEST ROTH) 23 May 1972 (1972-05-23)	1-4, 34, 36
Y	column 2, lines 47-66	5-11, 37, 40
A	column 3, lines 59-65	12, 13, 17, 18, 25-30
	column 4, lines 51-60; figures 2, 6B	
X	EP 0 679 812 A (OLEINIKOV VALERY GRIGORIEVICH ; GACHECHILADZE IVAN ALEXANDROVI (RU); K) 2 November 1995 (1995-11-02) cited in the application	1, 2, 4, 38
Y	page 4, line 37 - page 6, line 11; figures 1, 2	5-11, 14-32, 36, 37, 39, 40
X	WO 97/04280 A (VIDA NIKOLAUS ; KIKNADZE GENNADY IRAKLEVICH (RU); OLEINIKOV VALERY GRI) 6 February 1997 (1997-02-06) cited in the application	1, 2, 4, 6-11, 36
A	page 1, paragraph 1	12, 13, 21-25, 28-30
	page 5, lines 18-22 page 15, lines 1-14	
X	US 5 080 367 A (LYNCH FRANCIS DES ET AL) 14 January 1992 (1992-01-14)	12, 13, 35
Y	column 5, lines 53-61	14-32, 36, 37, 39, 40
	column 7, lines 3-12 column 8, lines 21-26 column 9, lines 29, 30; figures 2, 4, 5, 8, 9, 24	
P, X	WO 2004/048871 A (VIDA NIKOLAUS) 10 June 2004 (2004-06-10)	1-13, 17, 18, 21-30, 36, 37, 39, 40
	page 1, lines 6-15 page 6, lines 17-26 page 8, lines 17-33 page 9, lines 14-17; figures 3-5	
	----- -/--	

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/011227

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	DE 198 40 303 A (BRANDHORST INGO) 9 March 2000 (2000-03-09) abstract  column 2, lines 12-22; claims 1,2; figures 1,2 -----	33  12,13, 17, 21-24, 31,32

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/011227

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 11082860	A	26-03-1999	NONE	
US 3664928	A	23-05-1972	BE 760325 A1 DE 2053544 A1 ES 384271 A1 FR 2073720 A5 GB 1290050 A	17-05-1971 16-06-1971 16-01-1973 01-10-1971 20-09-1972
EP 0679812	A	02-11-1995	RU 2020304 C1 DE 69226711 D1 DE 69226711 T2 EP 0679812 A1 AU 1974292 A ES 2122998 T3 WO 9320355 A1 SG 47069 A1 US 6006823 A	30-09-1994 24-09-1998 25-03-1999 02-11-1995 08-11-1993 01-01-1999 14-10-1993 20-03-1998 28-12-1999
WO 9704280	A	06-02-1997	AU 6701596 A CN 1196790 A ,C DE 69620185 D1 DE 69620185 T2 WO 9704280 A1 EP 0839309 A1 ES 2172673 T3 US 6119987 A	18-02-1997 21-10-1998 02-05-2002 07-11-2002 06-02-1997 06-05-1998 01-10-2002 19-09-2000
US 5080367	A	14-01-1992	US 4936587 A AU 475525 B2 AU 4790472 A CA 967184 A1 CA 967186 A2 GB 1381897 A US 4729861 A	26-06-1990 26-08-1976 26-04-1974 06-05-1975 06-05-1975 29-01-1975 08-03-1988
WO 2004048871	A	10-06-2004	WO 2004048871 A2	10-06-2004
DE 19840303	A	09-03-2000	DE 19840303 A1	09-03-2000